

## Claims

1. A strontium silicate-based phosphor expressed by the following chemical formula 1:

5  $\text{Sr}_{2-x}\text{SiO}_4:\text{Eu}^{2+}_x$  ----Chemical formula 1

where x is  $0.001 \leq x \leq 1$ .

2. A method for fabricating a strontium silicate-based phosphor, the method comprising the steps of:

10 forming a mixture where strontium carbonate ( $\text{SrCO}_3$ ), silica ( $\text{SiO}_2$ ), and europium oxide ( $\text{Eu}_2\text{O}_3$ ) are mixed;

drying the mixture; and

performing a heat treatment of the dried mixture in a reducing atmosphere to form  $\text{Sr}_{2-x}\text{SiO}_4:\text{Eu}^{2+}_x$

15 where x is  $0.001 \leq x \leq 1$ .

3. The method of claim 2, wherein the step of forming the mixture comprising the steps of:

weighing the respective components of the mixture; and

20 mixing the respective components with a solvent to form the mixture.

4. The method of claim 2, wherein the drying step is performed at a temperature range of 100 - 150 °C.

25 5. The method of claim 2, wherein the drying step is performed for a time range of 1 - 24 hours.

30 6. The method of claim 2, wherein the drying step is performed at a temperature range of 100 - 150 °C for a time range of 1 - 24 hours.

7. The method of claim 2, wherein the drying step is performed using an oven.

8. The method of claim 2, wherein the heat treatment is performed at a temperature range of 800 - 1500 °C.

9. The method of claim 2, wherein the heat treatment is performed for a time range of 1 - 48 hours.

10. The method of claim 2, wherein the heat treatment is performed at a temperature range of 800 - 1500 °C for a time range of 1 - 48 hours.

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11. The method of claim 2, wherein the drying step is performed at a temperature range of 110 - 130 °C for a time range of 8 - 12 hours, and the heat treatment is performed at a temperature range of 1200 - 1400 °C for a time range of 2 - 5 hours.

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12. The method of claim 2, wherein the heat treatment is performed in the reducing atmosphere made by a hydrogen-mixed gas.

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13. The method of claim 2, wherein the heat treatment is performed in the reducing atmosphere of a nitrogen gas containing 2 - 25% by weight of hydrogen gas.

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14. A white LED chip comprising:  
an LED; and

a strontium silicate-based phosphor, which is excited by a light emitted from the LED and expressed by the following chemical formula 1:

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$\text{Sr}_{2-x}\text{SiO}_4:\text{Eu}^{2+}_x$  ---Chemical formula 1  
where  $x$  is  $0.001 \leq x \leq 1$ .

15. The white LED of claim 14, wherein the light emitted from the phosphor has a wavelength band of 450 - 650 nm.

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16. The white LED of claim 14, wherein the LED is placed on a reflection cup by which the emitted light is reflected.

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17. The white LED of claim 14, wherein the LED for exciting the phosphor is a blue LED.

18. The white LED of claim 14, wherein the LED and  
10 the phosphor are molded by a transparent resin.